

**Report from the Trauma Task Force
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Introduction

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REQUEST FOR INFORMATION ON BEHALF OF PREHOSPITAL TRAUMA CARE

In 2016, the National Academies of Sciences, Engineering, and Medicine (NASEM) published a report, *A National Trauma Care System: Integrating Military and Civilian Trauma Systems to Achieve Zero Preventable Deaths After Injury* (2016 NASEM Trauma Report), that estimated as many as 20 percent of the nearly 200,000 annual trauma deaths in the United States could be prevented. In its report, the NASEM defined preventable deaths after injury as those casualties whose lives could have been saved by appropriate and timely medical care, irrespective of tactical, logistical, or environmental issues.

On December 2, 2016 the National Emergency Medical Services Advisory Council (NEMSAC) issued recommendations to FICEMS in response to the NASEM report (https://www.ems.gov/pdf/nemsac/NEMSAC_Advisory_MTSPE_Alignment_Trauma_Care_Report.pdf). NEMSAC recommended that FICEMS develop an integrated Federal strategy to address both the recommendations of the NASEM report and the need to update the Model Trauma Systems Planning and Evaluation (MTPSE) document, which includes an outdated Benchmarks, Indicators and Scoring (BIS) tool for evaluation of trauma systems.

On December 6, 2017, FICEMS and the Council on Emergency Medical Care (CEMC) co-hosted a listening session to hear from stakeholders about the challenges facing prehospital trauma care, especially in rural settings, and how to better integrate military and civilian EMS systems. An integrated national trauma care system would allow lessons learned from the battlefield to be translated to civilian EMS and provide opportunities for improved patient care.

A national trauma care system, that integrates military and civilian capabilities, is a crucial part of our Nation's infrastructure and is vital to preserve the health and productivity of the American people.

Request for Information:

NHTSA, on behalf of the Federal Interagency Committee on Emergency Medical Services (FICEMS), sought comments from all sources (public, private, governmental, academic,

professional, public interest groups, and other interested parties) on improving prehospital trauma care. The purpose of this notice was to solicit comments on improving prehospital trauma care, and to request responses to specific questions (see below). (*Comments were requested by July 26, 2018*).

Questions on Improving Prehospital Trauma Care

1. What are the current impediments, and possible solutions, to achieving zero preventable deaths in the following settings:
 - a. Wilderness;
 - b. Rural;
 - c. Suburban; and
 - d. Urban.
2. What should be the national aim for preventable prehospital trauma deaths?
3. What should be the interim national goals to achieve zero preventable deaths in the prehospital setting?
4. What are the most promising or innovative opportunities to improve prehospital trauma care in the following settings:
 - a. Military;
 - b. Wilderness;
 - c. Rural;
 - d. Suburban; and
 - e. Urban.
5. How could the Learning Health System model (as described in the 2016 NASEM Trauma Report) be applied to civilian EMS?
6. Are there actions that could be taken today in the prehospital setting (such as promising clinical interventions) that could dramatically improve outcomes for patients who are:
 - a. Suffering from traumatic pain;
 - b. Severely injured in a rural roadway crash;
 - c. Suffering from penetrating trauma;
 - d. Subjected to a compromised airway;
 - e. Suffering from a major hemorrhage;
 - f. Suffering from a pneumothorax;
 - g. Suffering from blunt force trauma;
 - h. Suffering from traumatic brain injury;
 - i. Other clinical conditions (please explain).
7. What EMS evidence-based guidelines could be developed to improve trauma patient outcomes?
8. As an EMS stakeholder what do you see is the potential role of the National EMS Information System (NEMSIS) and the EMS Compass performance measures in improving prehospital trauma care?

9. How might active duty, National Guard, and reserve component military resources be used to improve civilian trauma care outcomes in the following settings:

- a. Use of military rotary wing assets to support civilian EMS;
- b. Placement of military medics in the field to support and cross train with civilian EMS.

10. What actions can be taken to improve public awareness of traumatic injury as a public health issue?

11. What actions could be taken to improve the rapid extrication of motor vehicle crash patients?

12. What actions could be taken to improve the rapid transport of trauma patients?

13. What actions could be taken to improve prehospital care for pediatric trauma patients?

14. What actions could be taken to improve tribal prehospital trauma care?

15. What research is needed to improve prehospital trauma care during a mass casualty incident?

16. What is the potential role of 9–1–1 in improving prehospital trauma care outcomes?

17. What is the potential role of bystander care, such as Stop the Bleed, in improving prehospital trauma care outcomes?

18. What is the potential role of vehicle telematics in improving prehospital trauma care outcomes?

19. What is the potential role of telemedicine in improving prehospital trauma care outcomes?

20. What is the potential role of community paramedicine, mobile integrated healthcare, and other emerging EMS subspecialties in improving prehospital trauma care outcomes?

21. How could data-driven and evidence-based improvements in EMS systems improve prehospital trauma care?

22. How could enhanced collaboration among EMS systems, health care providers, hospitals, public safety answering points, public health, insurers, and others improve prehospital trauma care?

23. What are some opportunities to improve exchange of evidence based prehospital trauma care practices between military and civilian medicine?

24. Do you have any additional comments regarding prehospital trauma care?

Responses were received from the following and are available as an appendix:

12 National organizations, 1 Regional organizations, and 13 Individuals

The charge of the Trauma Task Force:

- Look through the responses to the RFI and:
 1. identify **themes**
 2. identify **critical issues that should be a must to include in a white paper**
 3. identify **any specific issues for NEMSAC to address as another advisory vs. topics for discussion or to include in other advisories** (e.g. such as reimbursement for runs)

4. identify items that already have an evidence base and can be implemented now
5. consider a gap analysis for items that **need more research**
6. consider a separate category for **items that need to be implemented now but will require funding** from some source and prioritize this list

Our deliverable:

Provide a summary to inform a white paper, which will be contracted by NHTSA and/or FICEMS. A spreadsheet and PowerPoint presentation that summarizes our work are also available as appendices.

Categories

- Clinical Care
- Military Integration
- Data and Measures
- Notification and Communications
- Governance and System Design
- Public Involvement
- Education and Training
- Research

Summaries (see attached spread sheet)

Clinical Care

Several themes were identified where the evidence supports immediate implementation. These include: 1) Using evidence-based guidelines when available to develop/adopt trauma care protocols and procedures. 2) Standardizing on-scene trauma triage of patients including triage for pediatric patients. These criteria should optimally be written into local, state, regional, and national EMS guidelines for consistency across state and regional borders. A new NEMSAC advisory may be needed to better define this issue. 3) Discontinue use of the nomenclature “spinal Immobilization” and use the alternate “spinal motion restriction (SMR)” using the multi-organizational consensus statement published in Prehospital Emergency Care (Spinal Motion Restriction in the Trauma Patient - A Joint Position Statement. Prehosp Emerg Care. 2018 Aug 9:1-3. doi: 10.1080/10903127.2018.1481476).

Two themes were identified as critical issues. These were: 1) Implementing competency-advanced airway control. The task force agreed that more research is needed to direct training. 2) Correcting on-scene trauma triage of both adult and pediatric patients. Adoption of a national triage system would be optimal to provide consistency across borders. However, the committee recognizes that triage systems vary from agency to agency, state to state and region to region and accomplishing this goal will be met with challenges. This does not mean it should be ignored.

Military Integration

Civilian EMS would benefit from the knowledge and experience of military providers who are transitioning to civilian life. A critical theme identified for Military Integration is understanding how to bridge the gap between military and civilian medic education. Military medics may have extensive trauma experience but need bridge courses and curricula to fill in the gaps for a smooth and timely transition to civilian EMS systems. One gap is to define the need. A few programs have been developed at colleges/universities; however anecdotal evidence reveals that demand for these programs by veterans has been limited. Further investigation is needed to determine the cause(s) of the limited interest. For example, is it truly a lack of interest or a lack of knowledge that these programs exist? As an incentive, programs might be developed to incentivize veterans to fill EMS needs in rural areas by paying back education loans. The task force agreed that a new NEMSAC advisory may be needed to better define the gaps and challenges that face the issue of military integration.

Data and Measures

Several themes were identified in this section and there was cross fertilization between all of them. Most need an infrastructure and funding stream.

There is a prescient need for a universal health record with bidirectional flow to all who care for patients, especially EMS and community paramedicine programs, to aid in the continuum of care for patients. This includes patients who have care provided in any venue including outpatient clinics, emergency departments, urgent care centers, hospitals, rehabilitation centers, nursing homes, and home healthcare. The standardization of QI and PI supports the goal of data quality that is seamless and meaningful. Having a universal health record would help with hard-wired surveillance fields that are needed for national and regional Centers for Disease Control and Prevention (CDC) work on surveillance endeavors. There is a need for Integration of pre-hospital systems w/ hospital electronic medical records & motor vehicle crash telematics. There should be improved links between data collection & analysis capabilities; and increased collaboration between federal, state and local agencies and technology companies to develop more robust QI programs. **A recommendation is to encourage dialogue between innovators and discourage competition; could NHTSA sponsor a think tank by all of these groups and encourage collaboration as well as a strategic plan?**

An issue felt to deserve its own advisory is the need for use of national prehospital performance measures and improvement goals that are developed and enforced by states. The COMPASS project is probably the nearest thing to PMs that identifies quality measures for EMS. However, these are not being enforced in any way. The project funding has ended and use is voluntary. There is a new support structure through NEMSQA. At EMS.gov there is no ongoing support for COMPASS mentioned although the measures can be downloaded and used. There is a disclaimer about use of the measures. They are the only version. They also are not comprehensive. There is no mechanism right now to keep them updated. Strategies to increase participation should be investigated. Mandating enforcement would take much longer and would have considerable resistance from the States.

Notification and Communications

A prevailing theme is the need to use existing technology to ensure seamless out-of-hospital communication between all responders including 1st and 2nd response teams, police, and trauma centers. This includes timely transmission of information. This system must transcend HIPAA for the good of the patient and ultimately close the loop with follow-up to prehospital providers. Another global theme is how to address communication in rural and austere environments that are resource poor. This may present challenges from the perspective of security and financing as technology seems to be available. Two of three of these topics (seamless communication, extending wilderness/rural cellphone coverage) were identified as critical issues that need to be implemented now but will require financial resources. Transcending HIPAA remains a critical issue.

The use of telehealth has potential to provide a more extensive reach to pre-hospital trauma care EMS services, physicians & clinicians to minimize delays in care. This could also extend to paramedicine providers and to the patient who refuses transport. There is some but not extensive literature on this topic and the task force thought it was deserving of an advisory and research; an advisory is in process by the NEMSAC.

Governance and System Design

The prevailing theme was recognition of the need for model legislation and rules for states to license dispatch centers and also to certify emergency medical dispatchers. Dispatcher proficiency is variable across the country as these centers may be staffed by laypeople, EMS, nurses or others with variable medical experience. Emergency Medical Dispatch (EMD) training can be fairly menial and abbreviated. Data around the effectiveness of dispatchers is meager with respect to trauma and is more focused on CPR. Much of what an EMD does is protocolized. Setting up a standard of minimum requirements/curriculum would be potentially impactful. Research is needed in the trauma arena to determine best anticipatory guidance and knowledge that would inform a curriculum. NENA.org has standards for emergency dispatchers, offers courses, and holds a conference every year. The task force identified this as a critical issue and a topic that could support its own advisory.

Public Involvement

The task force discussed the use of drones to deliver mass casualty supplies and plans to include this in an advisory that is being written by the NEMSAC.

Although there were several other topics discussed, none rose to the level of task force advisement. However, the task force discussed two themes. They discussed at length the failure of the public and the government to recognize the magnitude and impact of traumatic injury on our country. The awareness of the consequences of trauma permeates the media but doesn't generally make it into a line item budget in Congress that would direct more funds toward injury prevention and research to mitigate the effects of trauma. This will require less "sensationalism" and efforts to improve the flow of information directed to the public regarding the public health issues of traumatic injury. This could rise to the level of its own advisory.

The task force recognized the impact of the Stop the Bleed Program but also noted that it addresses the consequences of injury that has already occurred and not how to prevent it.

Education and Training

Several themes regarding education and training were noted. EMS professional loan forgiveness is one common theme. The task force recognized this as a critical issue and one that is being addressed with a NEMSAC advisory. The ability of EMS professionals to obtain the training necessary to increase their level of certification and maintain a high level of competency in their scope of practice requires both funding and time for training. Loan forgiveness programs are a well-recognized way to incentivize medical professionals to seek additional training. This in turn will ensure a well-staffed and highly-trained workforce necessary for the management of trauma patients with first available responders on site and will have an impact in naturally underserved areas such as rural and tribal communities. Expanding requirements for training to care for certain subpopulations, such as children, was also identified as a critical issue by the task force. Special populations have a different physiology and are infrequently cared for by EMS professionals. An increase in training requirements for the management of these special populations will result in increased exposure and practice prior to high-stakes, low frequency events.

Integration of the military again arose in the review of public responses with respect to education. The military can be seen as a public education resource and training of military EMS professionals should be integrated with civilian training to facilitate co-response in the field. This education could involve both simulation and drills. The task force recognized that this may require a gap analysis and more research into how the integration of the military and civilian educational programs would best be pursued.

A third common theme is the potential uses for virtual reality technology. Several organizations called for its use to facilitate the use of high-fidelity simulation and telehealth in training. This would have the greatest impact in rural communities, but it can also facilitate integration between the out-of-hospital setting and the hospital community. A focus of this training can include effective field triage and patient destination. This can also be an affordable way to train providers who need to travel long distances to receive training. The task force recognized that this topic requires its own advisory to address the issue.

Finally, there were several recommendations regarding the need for high quality education to address certain clinical conditions such as airway management, spinal motion restriction, and on-scene triage of patients. These recommendations are all addressed in Clinical Care.

Research

The task force identified two common themes in the Research category. First, there is no secure funding source for prehospital related trauma research at the federal level, including at the NIH. A second theme aligned with the first is a lack of evidence surrounding best interventions for patients cared for in the out-of-hospital setting. The majority of current patient care interventions are based on emergency department and hospital interventions that

are translated to the out-of-hospital setting, despite the fact that the IOM called for an increase in research and evidence base to support interventions in the prehospital environment well over a decade ago. Data sources including the National Trauma Data Bank and the National EMS Information System incorporate few processes that can facilitate data integration at the patient level, which would allow for an examination of care from the out-of-hospital setting through discharge. The task force recommends an NEMSAC advisory be drafted that addresses these funding and knowledge gaps and calls for a national prehospital trauma research action plan.